

1. A sterilizer for providing a heated and pressurized steam environment for sterilizing articles, said sterilizer comprising:

a sterilizing chamber for receiving articles to be sterilized, said chamber including an inner wall defining a chamber interior;

5 a planar surface defining a front face formed generally perpendicular to and excluding outwardly from said inner wall, said front face defining a chamber opening for access to said chamber interior;

a door mounted for movement relative to said chamber between a fully closed position wherein said door is in engagement with said front face and a fully open position wherein an operator may access the chamber interior for insertion and removal of articles therein; and

10 a resilient seal between said door and said chamber interior, said seal comprising an annular lip having opposing inner and outer surfaces, said lip extending from said door into said chamber with said outer surface of said lip in engagement with said inner wall of said chamber whereby pressure within said chamber acts on said inner surface of said lip to bias said outer surface of said lip into engagement with said inner wall of said chamber.

2. The sterilizer of claim 1 including a mechanism for latching said door in a partially open position spaced from said chamber opening and intermediate said fully closed position and said fully open position wherein, in said partially open position, said lip forms a bridge extending between said inner wall and said door whereby said lip

5 inhibits dripping of condensation from said door and said chamber.

3. The sterilizer of claim 2 wherein said door is supported for movement about a horizontal pivot axis extending adjacent a bottom edge of said chamber opening.

4. The sterilizer of claim 1 wherein said door includes a pressure lock having an actuator mechanism actuated by pressure in said chamber to lock said door in said fully closed position, and said resilient seal extends inwardly from said lip over an inner surface of said door to provide a flexible cover for said actuator mechanism.

5. The sterilizer of claim 4 including a latching mechanism for latching said door in said fully closed position, said latching mechanism including a moveable latch located on said door and a catch located in stationary relationship to said chamber, said latch engaging said catch to prevent movement of said door, said latching mechanism

5 further including a lock member connected to said latch for movement with said latch, and said pressure lock including a plunger moveable into the path of said lock member to prevent movement of said lock member and said latch when a predetermined pressure is present within said chamber.

6. A sterilizer for providing a heated and pressurized steam environment for sterilizing articles, said sterilizer comprising:

a sterilizing chamber for receiving articles to be sterilized, said chamber including an inner wall defining a chamber interior;

5 a planar surface defining a front face formed generally perpendicular to and extending outwardly from said inner wall, said front face defining a chamber opening for access to said chamber interior;

a door supported for movement about a horizontal axis relative to said chamber between a fully closed position wherein said door is in engagement with said
10 front face and a fully open position wherein an operator may access the chamber interior for insertion and removal of articles there;

a mechanism for latching said door in an intermediate position between said fully open position and said fully closed position; and

a resilient seal between said door and said chamber interior wherein, in at
15 least the intermediate position of said door between said fully open position and said fully closed position, said resilient seal extends from said door to said chamber interior across a lower edge of said chamber whereby said resilient seal inhibits dripping of condensation from said door and said chamber.

7. The sterilizer of claim 6 wherein said resilient seal is attached to said door and includes a lip extending transverse to an inner surface of said door.

8. The sterilizer of claim 7 wherein, in said fully closed position of said door, said lip extends inside said chamber and into contact with said inner wall whereby

increasing pressure within said chamber interior biases said lip into sealing engagement with said inner wall.

9. The sterilizer of claim 6, wherein said latching mechanism includes a moveable latch located on said door and a catch to prevent movement of said door, said latching mechanism further including a lock member connected to said latch for movement with said latch, and including a pressure lock comprising a plunger moveable into the path of said lock member to prevent movement of said lock member and said latch when a predetermined pressure is present within said chamber.

10. The sterilizer of claim 9 wherein said plunger is actuated by an actuator mechanism extending through said door, and said resilient seal extends over an inner surface of said door and forms a flexible cover over said actuator mechanism whereby said actuator mechanism is actuated by pressure within said chamber.

11. A sterilizer for providing a heated and pressurized steam environment for sterilizing articles, said sterilizer comprising:

a sterilizer chamber for receiving articles to be sterilized, said chamber including an inner wall defining a chamber interior and means defining a chamber opening;

a door mounted for movement relative to said chamber between a fully closed position wherein said door is in sealing engagement over said chamber opening and a fully open position wherein an operator may access the chamber interior for insertion and removal of articles therein;

10 a heater and water source providing steam to said chamber interior;
control means for monitoring and controlling a sterilization process;
temperature and pressure sensing means connected to said control means for sensing temperature and pressure, respectively, within said chamber interior; and
a purge valve in fluid communication with said chamber interior, said
15 control means opening said purge valve to purge air from said chamber interior in response to at least one of said temperature and pressure sensor means sensing a predetermined condition within said chamber during formation of steam within said chamber whereby the percentage of air relative to steam within said chamber is decreased.

12. The sterilizer of claim 11 wherein said control means opens said purge valve in response to input from said temperature and pressure sending means indicating a deviation from a saturated steam condition within said chamber.

13. The sterilizer of claim 11 including a seal between said door and said chamber opening wherein said seal includes a lip supported for engagement with said inner wall and located such that pressure within said chamber interior will force said lip into sealing engagement with said inner wall.

14. The sterilizer of claim 13 including a mechanism for latching said door in a partially open position spaced from said chamber opening and intermediate said fully closed position and said fully open position wherein, in said partially open position, said lip forms a bridge extending between said inner wall and said door
5 whereby said lip inhibits dripping of condensation from said door and said chamber.

15. The sterilizer of claim 14 including a solenoid connected to a release mechanism for unlatching said door and connected to said control means wherein said control means actuates said solenoid in response to a sensed pressure in said chamber decreasing to a predetermined value after a sterilization process whereby said
5 mechanism for latching said door is released to permit said door to move to said partially open position.

16. The sterilizer of claim 11 including a seal supported on said door for forming a pressure seal between said door and said chamber opening wherein said door includes a pressure lock actuated by pressure in said chamber to lock said door in said fully closed position, and said seal extends inwardly from said lip over an inner surface
5 of said door to provide a flexible cover for an actuator mechanism for said pressure lock.

17. A method of sterilizing articles in a sterilizer including a sterilizing chamber defining a chamber interior for containing articles to be sterilized and a door for closing said chamber, said method comprising the steps of:

- 5 placing articles to be sterilized within said chamber;
- supplying said chamber with steam;
- monitoring gas properties within said chamber, said gas properties comprising temperature and pressure;
- comparing at least one of said gas properties to a predetermined value for said at least one gas property; and
- 10 automatically opening a purge valve of said chamber in response to said at least one gas property reaching said predetermined value whereby air is released from said chamber to decrease the percentage of air relative to steam in said chamber.

18. The method of claim 17 wherein said step of comparing comprises comparing the temperature and pressure within said chamber to a predetermined saturated steam condition, and said step of opening said purge valve comprises opening said purge valve if the temperature and pressure within said chamber deviates from said

5 predetermined saturated steam condition.

19. The method of claim 17 wherein said step of opening said purge valve comprises opening said purge valve for a preset period of time.

20. The method of claim 17 wherein said step of opening said purge valve comprises opening said purge valve a plurality of times, each opening of said purge valve corresponding to at least one of said gas properties within said chamber reaching a predetermined value to thereby cause said comparison step to be performed.

21. The method of claim 17 including the step of holding the temperature within said chamber near a predetermined maximum value for a predetermined period of time after a saturated steam condition is reached within said chamber whereby articles within said chamber are sterilized.

22. The method of claim 17 including the step of causing a lock to be actuated in response to an increased pressure within said chamber to thereby lock said door closed.

23. The method of claim 17 wherein the sterilizer includes a seal located between said door and said chamber interior, the method further including the step of:
biasing said seal into sealing engagement between said door and said chamber interior in response to increased pressure within said chamber interior.

24. The method of claim 17 including the step of said control means automatically actuating said door to move to a partially open position in response to a sensed pressure in said chamber decreasing to a predetermined value following a sterilization operation.

25. A method of sterilizing articles in a sterilizer having a sterilizing chamber, pressure and temperature sensors for measuring pressure and temperature in said chamber, and a controller including a table of corresponding pressures and temperatures, comprising:

5 measuring temperature and pressure in said chamber;
comparing the measured pressure in said chamber to the pressure in said table corresponding to the measured temperature; and
altering said measured pressure if it varies by a predetermined amount from the pressure in said table corresponding to the measured temperature until the
10 measured pressure in said chamber is substantially equal to the pressure in said table corresponding to said measured temperature.

26. The method of claim 25 wherein the step of altering the pressure conditions within the chamber includes purging air from the chamber.

27. The method of claim 25 wherein at least some of the predetermined values of pressure and temperature correspond to saturated steam conditions.

28. The method of claim 25 further including the steps of:
periodically comparing measured pressures and temperatures to predetermined values of pressure and temperature corresponding to maximum and minimum limits; and

5 automatically restarting a sterilization cycle when the measured pressure or temperature values exceed the predetermined pressure and temperature limits.

29. The method of claim 25 wherein the sterilizer further includes a heater for adding heat to the chamber, the method further including the steps of:

controlling the temperature inside the chamber by cycling the heater on and off according to a predetermined schedule based on the difference in measured
5 temperature and a predetermined temperature.

30. The method of claim 29 wherein the measured pressure and temperature are determined during a period when the heater is not on.

31. A method for sterilizing articles in a sterilizer having a sterilizing chamber, a controller including a memory device containing predetermined values of pressure and temperature, a reservoir for supplying a predetermined quantity of water to the chamber, and a vent for venting air in the chamber, the method including the steps

5 of:

placing articles to be sterilized in the chamber;

opening the vent;

filling the chamber with water from the reservoir;

measuring atmospheric pressure;

10 calculating a temperature at which the water will boil;

heating the water to produce steam;

closing the vent to build pressure when the measured temperature is substantially equal to the calculated boiling temperature;

periodically measuring temperatures and pressures within the chamber;

15 periodically comparing measured pressures to the predetermined values of pressure at measured temperatures; and

purging air from the chamber if a measured pressure differs from the predetermined pressure by a predetermined amount.

32. The method of claim 31 wherein at least some of the predetermined values correspond to saturated steam conditions and the step of purging air from the chamber occurs when measured pressure differs from the saturated steam pressure by a predetermined amount.

33. The method of claim 32 wherein at least some of the predetermined values correspond to maximum and minimum limits of pressure and temperature, the method further including the steps of:

periodically comparing measured pressures and temperatures to
5 predetermined values of pressure and temperature corresponding to maximum and minimum limits; and
automatically restarting a sterilization cycle when the measured pressure or temperature values exceed the predetermined pressure and temperature limits.

34. The method of claim 32 wherein step of purging air from the chamber when a measured pressure differs from the saturated steam pressure by a predetermined amount continues throughout the sterilization cycle.

35. The method of claim 34 wherein air is purged from the chamber during

36. The method of claim 32 wherein air is purged from the chamber when the pressure difference is greater than or equal to about 10 kPa and the measured temperature in the chamber is less than about 132.8°C, and air is purged from the chamber when the pressure difference is greater than or equal to about 3 kPa and the measured temperature in the chamber is greater than or equal to about 132.8°C.

37. The method of claim 31 further including the steps of:

opening a valve to release substantially all of the steam from the chamber; and

controlling the temperature inside the chamber to help dry the articles by cycling the heater on and off according to a predetermined schedule based on the difference in measured temperature and a predetermined temperature.